GB4440
Winter 2004
Midterm Take Home
Due: COB Monday 1 March 2004

The African Tanker Problem

Problem Description

A port in Africa is used to load tankers with crude oil for overwater shipment. The port has facilities for loading as many as three tankers simultaneously. Tankers arrive at the port every Uniform (4, 18) hours, and are of three different types. The relative frequency of the various types, and their loading-time requirements, are shown in the following table.

Type	Relative Frequency	Loading Times (hrs)
1	25	Uniform (16, 20)
2	55	Uniform (21, 27)
3	20	Uniform (32, 40)

There is one tug at the port. Tankers of all types require the services of this tug to move into a berth, and later to move out of a berth.

When a tug is available berthing or deberthing activity takes about 1 hour. Operating experience shows that the three berths at the port are occupied about 80 percent of the time.

Design a simulation model to estimate the in-port residence time of the three types of tankers which use the port.

Make 30 runs of 2,500 hours for each run with a warm-up period of 500 hours and construct confidence intervals for the average port residence time for each ship type.

Deliverables

1. Electronic copy of your .doe file in the format <name>_midterm.doe, zipped if possible.
2. Hard copy of the "Category Overview" report from your run with 30 replications. Do not print out the reports for all replications, just the "Category Overview".